



United States Department of Agriculture

Natural Resources Conservation Service

**CEAP Conservation Insight**  
Conservation Effects Assessment Project

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## Wyoming's Core Area Policy and Conservation Easements Benefit Sage-Grouse

### Summary Findings

- Wyoming supports nearly 40% of the world's sage-grouse population. Yet many areas of sagebrush habitat in the state are undergoing rapid transformation for energy and residential development.
- In 2008, Wyoming enacted a proactive strategy that delineates areas with abundant grouse and limits development within these core habitat areas across the state in an effort to protect the species.
- A recent study by The Nature Conservancy (TNC), University of Wyoming and the Sage Grouse Initiative (SGI) looked at potential future residential and energy development to measure how well the policy could sustain sage-grouse numbers in the short and long term.
- Study findings suggest that the core area policy, combined with targeted conservation easements on private lands, could reduce anticipated sage-grouse losses by half statewide, and by nearly two thirds within core habitat areas.



### Background

Wyoming hosts the largest sage-grouse population of any state in the species' range: 37% of the entire greater sage-grouse population (Doherty et al. 2010). The species inhabits sagebrush habitats from the western mountains across the state's vast basins. Wyoming also has a dynamic economy powered by agriculture and the production of oil, gas and renewable energy, and many regions are seeing residential growth as people are attracted to energy jobs or the outdoor amenities of western towns. All of these activities fragment the once-unbroken sagebrush sea so crucial for sage-grouse.

In 2008, Wyoming enacted a policy to conserve sage-grouse and balance

economic development with conservation. The Greater Sage-Grouse Core Area Protection Policy was enacted by executive order and updated most recently in 2011 (Wyoming Executive Order 2011-5). The heart of the policy is protection of core sage-grouse population areas (the regions with the largest numbers of communal breeding grounds, or leks, and grouse) and restricting habitat alterations for a minimum of five years, while allowing existing land uses to continue.

The Bureau of Land Management (BLM) followed with a statewide Instructional Memorandum to "manage Greater Sage-Grouse seasonal habitats and maintain connectivity in identified areas in support of



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the population management objectives set by the State of Wyoming.” The BLM policy calls for a reduction of management activity changes on public lands administered by the agency, including the federal mineral estate (BLM 2012).

On private lands, NRCS and land trusts statewide have invested more than \$100 million on voluntary conservation easements to permanently restrict development in exchange for direct payments and/or tax incentives (Copeland et al. 2013).

### Assessment Partnership

As part of the science support provided by the Conservation Effects

Assessment Project (CEAP) to the NRCS Sage Grouse Initiative (SGI), a partnership was formed among NRCS, The Nature Conservancy (TNC), and the University of Wyoming to assess the ability of Wyoming’s strategy to protect sage-grouse populations. The assessment also examined the contribution of conservation easements and the State’s core area policy to sage-grouse conservation under different “build-out” scenarios over short- and long-term time frames.

### Using Build-out Scenarios to Forecast the Future

The assessment team first considered the biggest threats to sage-grouse

and chose to study those that are currently the most important drivers of landscape change in Wyoming: energy development (wind, oil and gas) and residential development. With a Geographic Information Systems (GIS) platform, they used geospatial modeling to forecast potential development, analyze the cumulative threats on sage-grouse, and measure how proactive conservation could abate those threats (Figure 1).

By integrating independent data on predicted wind, oil and gas, and residential development, the team created “build-out” scenarios—first for the next 20 years, and then a long-term forecast based on a doubling of

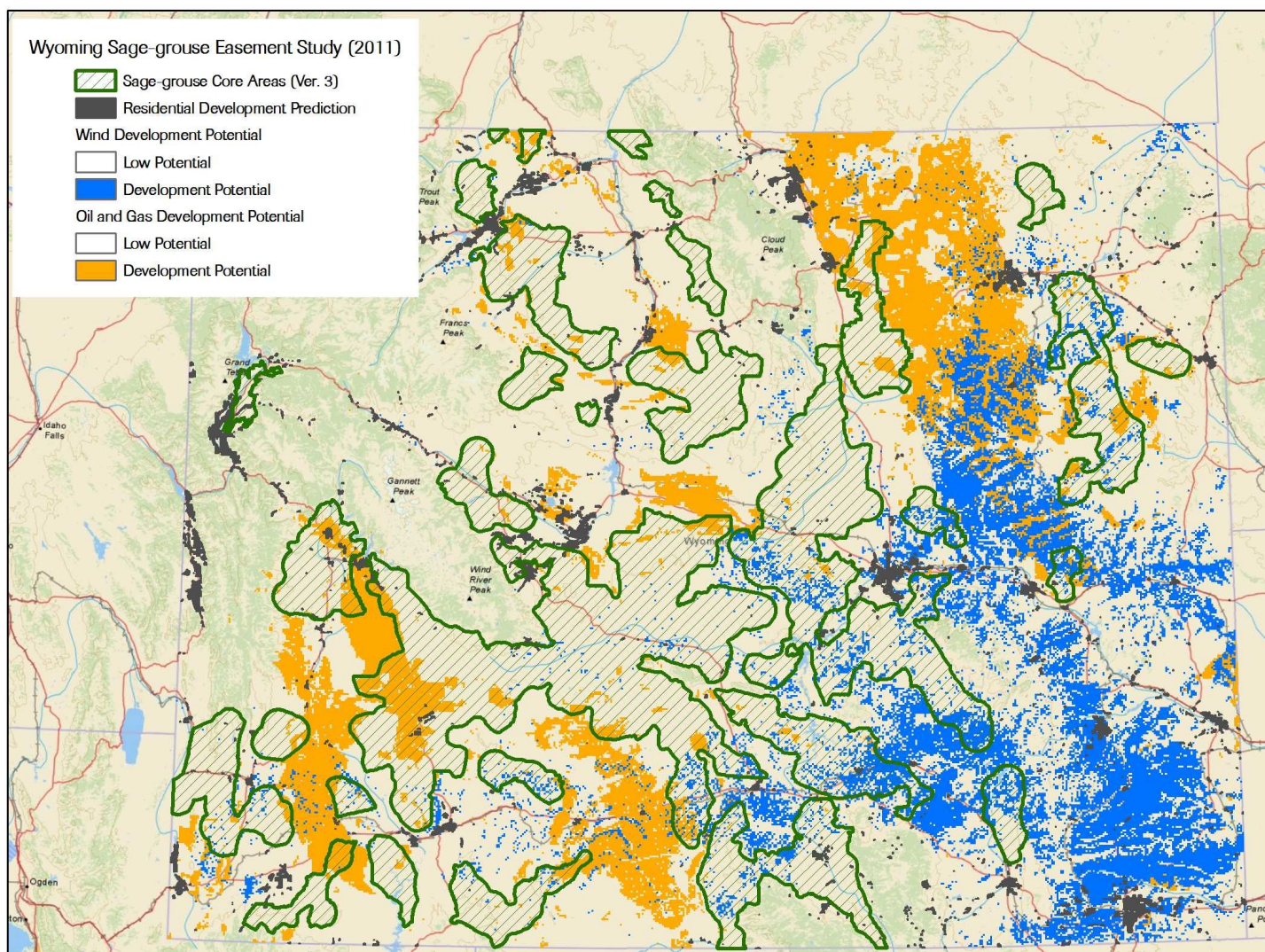


Figure 1. Predicted residential (dark gray), wind (blue), and oil and gas (yellow) development across Wyoming, overlaid with sage-grouse core population areas (green hatching), to predict the impact of development on grouse populations.



wind and residential development and a maximum build-out of oil and gas. With these scenarios in place, they measured the cumulative potential landscape change for sage-grouse across Wyoming.

The team linked these changes in the human footprint to sage-grouse lek locations, buffering the leks by 5 miles (the typical zone for hens to nest around leks), and then calculated how grouse populations could change with and without the conservation measures of Wyoming's core area policy and conservation easements in place.

## Findings

The team's findings were clear. Without conservation measures, the models predicted that cumulative, long-term development could threaten nearly 30% of Wyoming's sage-grouse population. Statewide, grouse could decline by 14% in the short term, and 29% long term. Within core population areas, population declines without conservation were predicted to be 11% in the short term, and 24% under maximum development (Copeland et al. 2013). Conservation measures under Wyoming's core area policy could significantly avert projected population losses. With the policy in place, the models predicted that no leks would be extirpated within core areas, and that population losses would be reduced to 11–18% statewide, and 7–12% within core areas (Figure 2, Copeland et al. 2013). These findings give support to Wyoming's conservation policy: if implemented as intended and sustained over time, the policy's measures could stem a dramatic sage-grouse decline.

The addition of targeted conservation easements could play a signifi-

cant role in protecting summer range for grouse. As the core area policy does not restrict residential development, conservation easements can protect habitat on private lands that are vulnerable to development.

These are voluntary legal agreements between a landowner and a land trust or government agency that provide the landowner compensation in return for giving up certain development rights. Conservation easements protect land values such as wildlife habitat and open space in perpetuity.

The models predicted that the addition of \$250 million in targeted easements would avert another 9% to 11% of potential sage-grouse population decline (Copeland et al. 2013). Focusing easement purchases within core habitat areas further protects the core areas from potential subdivision on private lands, and ensures the highest return on conservation investment.

Easements play an important role where the core area energy policy has little effect. Easements can protect private lands from residential or wind development where the conversion risk is high. They also protect summer range, which is important

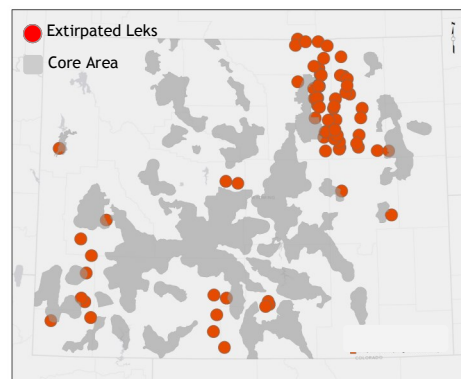


Figure 2. Sage-grouse leks that may be extirpated under the model's long-term development scenarios with conservation in place. Extirpated leks are concentrated outside core areas in the Powder River Basin of northeast Wyoming where more than 30,000 oil and natural gas wells had already been drilled prior to core area policy enactment.

sage-grouse brood-rearing habitat and typically occurs on private lands.

Under the model scenarios, the most effective conservation strategy combined the core area policy with targeted conservation easements—long-term population loss could be reduced to only 9–15%, cutting predicted losses in half statewide, and by two-thirds within core areas (Figure 3, Copeland et al. 2013).

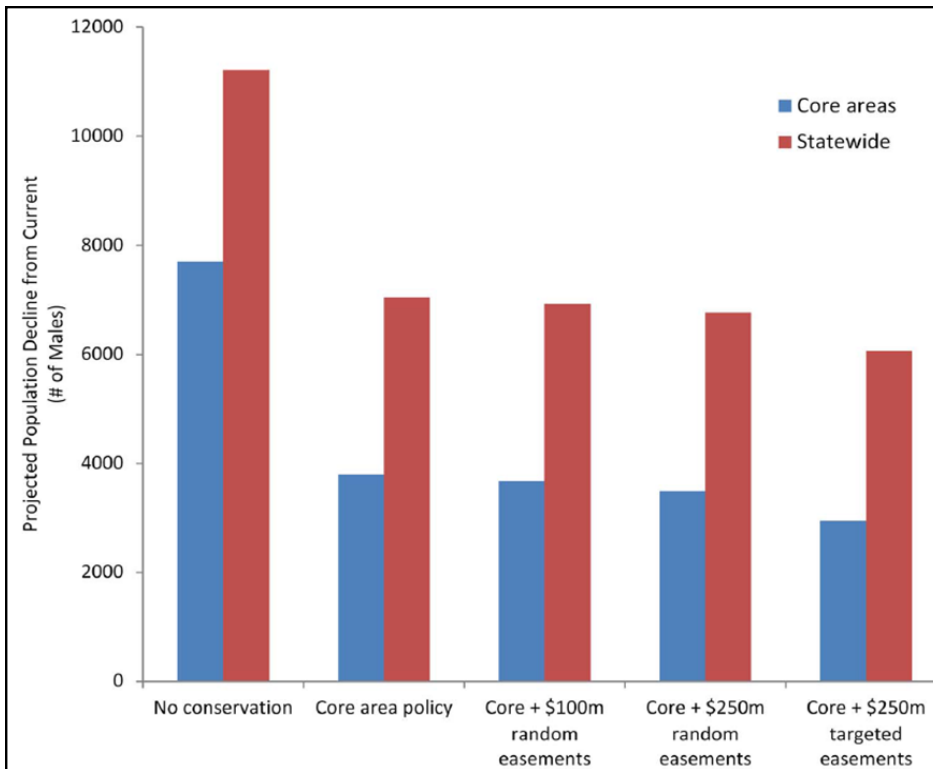
## Ecosystem-based Management

Halting subdivision on private lands exemplifies how many threats operate outside the reach of a regulatory



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Conservation easements provide a means for working ranches to remain productive while ensuring important sage-grouse habitats remain intact.



**Figure 3.** Total predicted male sage-grouse population declines in long-term growth scenarios compared to the no conservation scenario.

fix. Combining voluntary easements with core policy provides an ecosystem-based approach for reducing multiple threats across Wyoming (Boyd et al. 2014). Targeted establishment of conservation easements to complement Wyoming's core area energy policy represents SGI's focus on partnerships to maintain and restore ecosystem processes in the sagebrush-steppe. Other SGI conservation practices include conservation easements to preclude agricultural tillage on marginal sagebrush soils, grazing systems to increase hiding cover for nesting sage-grouse, removal of encroaching conifers to restore historic sagebrush, and others.

To learn more about all the SGI conservation practices, Wyoming's Core

Area Strategy and this analysis, or to view an SGI Youtube video, "Saving Sage Grouse: the Wyoming Example", visit us on the web at [www.sagegrouseinitiative.com](http://www.sagegrouseinitiative.com).

## References

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## The Conservation Effects Assessment Project: Translating Science into Practice

The Conservation Effects Assessment Project (CEAP) is a multi-agency effort to build the science base for conservation. Project findings will help to guide USDA conservation policy and program development and help farmers and ranchers make informed conservation choices.

One of CEAP's objectives is to quantify the environmental benefits of conservation practices for reporting at the national and regional levels. Because wildlife is affected by conservation actions taken on a variety of landscapes, the wildlife national assessment complements the national assessments for cropland, wetlands, and grazing lands. The wildlife national assessment works through numerous partnerships to support relevant assessments and focuses on regional scientific priorities.

This assessment was conducted through a partnership among NRCS, The Nature Conservancy (TNC) the University of Wyoming (UY) and the University of Montana (UM). Primary investigators on this project were Holly Copeland (TNC) and David Naugle (UM).

For more information: [www.nrcs.usda.gov/technical/NRI/ceap/](http://www.nrcs.usda.gov/technical/NRI/ceap/), or contact Charlie Rewa at [charles.rewa@wdc.usda.gov](mailto:charles.rewa@wdc.usda.gov).

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